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ABSTRACT

This junior high teaching unit on careers in mathematics is one in a series of career guidebooks developed by Project CHOICE (Children Have Options in Career Education) to provide the classroom teacher with a source of career-related activities linking classroom experiences with the world of work. The unit follows a typical format that includes the rationale, goals, performance objectives, instructional strategy, evaluation, and suggested instructional materials (including books, films, and filmstrips). The remainder of the unit is comprised of instructional activities designed to promote student awareness and interest in the part mathematics plays in today's society. (The unit is one of two in the series on science and engineering occupations. For these and junior high units on other career clusters, see CE 025 738-765.) (LRA)

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FOREWORD

Project CHOICE: Children Have Options in Career Education, is an Exemplary Project from the San Diego City School District, which has been adapted, with ESEA Title IV-C funding, for Kern County Schools.

Through Project CHOICE, units have been developed to provide the classroom teacher with a source of career-related activities linking classroom experiences with the world of work. All students, regardless of their post-high school plans, share an equal need for career awareness, decision making skills, and other elements of career education. This goal can be accomplished if all teachers and counselors "fit" the appropriate units where they best apply in the curriculum.

We are indebted to the San Diego City School District, and the Project CHOICE staff, for developing and field testing the original units.

For their excellent work in re-writing the units in order to adapt them for use in Kern County Schools, we wish to recognize:

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Janet S Wells

Janet Wells
Career Education Resource Teacher
Guidance Services

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A CAREER EDUCATION UNIT FOR JUNIOR HIGH SCHOOL

CAREERS WITH MATHEMATICS

Science and Engineering Occupations Career Cluster

CONTENTS

	Page
FOREWORD	i
RATIONALE	1
GOALS AND PERFORMANCE OBJECTIVES	1
INSTRUCTIONAL STRATEGY	1
EVALUATION	2
SUGGESTED INSTRUCTIONAL MATERIALS	2
COMMUNITY RESOURCES	2
INSTRUCTIONAL ACTIVITIES	3
PRETEST AND POST TEST	11

Science and Engineering Occupations Career Cluster

CAREERS WITH MATHEMATICS

RATIONALE

This unit is designed to promote student awareness and interest in the part mathematics plays in today's society. The student should appreciate occupations which involve mathematics oriented personnel. This unit will illustrate relationships between basic mathematics concepts and their application in the diversity of various careers.

GOALS

Through this unit, the student will:

- -Become aware of opportunities and prospects in careers involving mathematics.
- -Gain some background knowledge concerning relevant use of mathematics in careers.
- -Become familiar with the major requirements, preparation and training needed for entrance into this field.
- -Develop the ability to use an occupational guide.
- -Become aware of various sources of information.

PERFORMANCE OBJECTIVES

Upon completion of this unit, students should be able to:

- -Give at least two relevant examples of the relationship of mathematics to careers.
- -Identify three of the main job duties an accountant or a bank teller performs.
- -Briefly describe the educational requirements and training needed for entrance into two mathematics-related careers.

INSTRUCTIONAL STRATEGY

This curriculum unit has been designed for use by a class, small group, or individual student. So that the materials can be easily duplicated for individualized instruction, all learning activities are written for the student. Activities designated ALL are intended to provide factual information, those designated YOUR CHOICE have been included to provide

experiential activities which draw upon this background. This technique also provides an opportunity to put decision-making skills into action in the classroom, a process important to career development.

EVALUATION

It is important to evaluate the effectiveness of this unit in terms of the learning that takes place as well as reactions of the learner. A sample inventory has been provided, which can serve to both introduce the unit and assess its effectiveness, or the teacher may wish to develop his/her own.

SUGGESTED INSTRUCTIONAL MATERIALS

AVAILABLE AT INSTRUCTIONAL RESOURCE CENTER: OFFICE OF THE KERN COUNTY SUPERINTENDENT OF SCHOOLS OFFICE
(Please preview first, to be certain of suitability for specific students and situations).

Films:	MP	1097	Percent in Everyday Life (7-12)
	FK	2256	Problem Solving Techniques - Population Control
	MP	552	Arithmetic Is Important
	MP	2182	Metric Measure Made Easy

COMMUNITY RESOURCES

Contact local bank employees, bookkeepers, accountants, etc., to speak to the class about the need they have for math skills.

INSTRUCTIONAL ACTIVITIES

ALL:

1. PRETEST

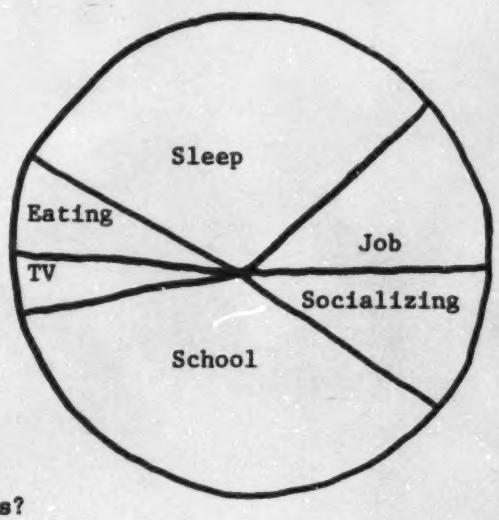
   Take the pretest to determine the level of understanding which you bring to this unit.

2. EXPLORE THE OPPORTUNITIES

   Careers in mathematics offer employment in many business settings. Use Career Center or library materials to complete the "Investigating Careers in Mathematics" worksheet (on the next page) to find out the major duties and training requirements for the fields listed. Work with a small group of other students to share the information you discover.

3. ACCOUNTING FOR YOURSELF

   Graphs are used in mathematics-related professions, particularly accounting, to make numbers come alive and be immediately understandable to even a casual observer.



   You can use a circle graph to illustrate the amount of time you spend each day in various activities. Make a graph: how many hours a day do you spend on

   a. Sleep?
   b. School?
   c. At work, at a job that earns you money?
   d. With friends, socializing, playing sports?
   e. On homework?
   f. Alone, playing, reading, watching TV?
   g. On chores around the house?
   h. With family, including meal times?
   i. On miscellaneous other pastimes?

   Your estimates will not be exact since your days are never quite the same, but they should add up to 24 hours. Draw slices in your circle graph to show each activity. Label the slice with the name of the activity and divide the number of hours by 24 to show what percent of each day you spend in various activities.

4. A PERFECT DAY

   Make another circle graph to depict an ideal day. Divide your circle as you would if you could <u>choose</u> the amount of time spent on various activities. Label each area with the percent of the entire day as you did in the graph above.

INVESTIGATING CAREERS WHICH USE MATHEMATICS

What are the main duties and responsibilities in each of these jobs? What training or special preparation is required for them?

Actuary -

Surveyor -

Bank Teller -

Bookkeeper -

Junior Accountant -

Data Processing Programmer -

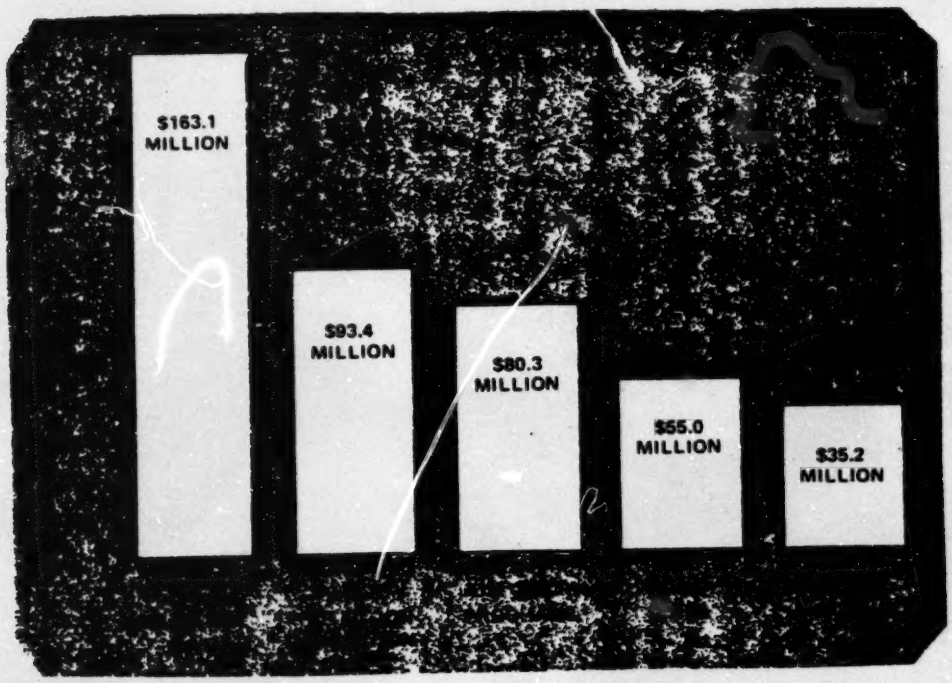
Computer Operator -

YOUR CHOICE:

5. BAR GRAPHS AND ACCOUNTING

Below is an example of the figures which might be in the budget of a county for a fiscal year. This is an example of the graphs which must be prepared by accountants. Other kinds of graphs used in business include line graphs and circle graphs.

Where the Money Goes



Use the following set of data to make a graph as if you were an accountant:

Where the Money Comes From

$168,000,000	Federal State Aid
131,000,000	Property Taxes
82,000,000	Miscellaneous Revenues
46,000,000	Federal Revenue Sharing

6. YOU AND BANKING

Most people in our society are consumers of banking services. Do you have a bank account? Do you know any other junior high students who do? Do they have savings accounts or checking accounts?

Speak to a bank employee, or use a dictionary, to find definitions for the following terms:

Deposit
Withdrawal
Interest
Overdraft
Compound interest

DISCUSS, with your class or with other students in a small group, the difference between a savings account and a checking account. Which would be more beneficial for you to have? Why?

7. KEEP A CHECKING ACCOUNT (Get checks and deposit tickets from your teacher.)

A. Open Your Account. Fill in the signature card with as much information as possible. Use your own name and address.

●Date: November 4, current year

_____ No. _____
(Type or print name of depositor here)

The undersigned depositor agrees with _____ that this account is to be carried by said bank as a COMMERCIAL SAVINGS account and all funds which the undersigned depositor has or may have on deposit therein with said bank shall be governed by its By-Laws, all future amendments thereof, all regulations passed or hereafter to be passed by its Board of Directors pursuant to said By-Laws, and by all rules and practices of said bank relating thereto including interest, service charges, etc.

Sign Here ⇨ Mr. / Miss / Mrs. _____

Address _____ Telephone _____

Business or Occupation _____ Birthplace _____

Father's Name _____ Mother's Maiden Name _____

Introduced by _____ Bank Reference _____

Opened by _____ Date _____ Amount _____

Account Closed _____ Average Balance $_____ Reason _____

INDIVIDUAL OR INDIVIDUAL TRUSTEE

B. Make First Deposit. Fill in BACK of deposit ticket with following information:

●Date: November 4
●Currency $25.00
●Coin 4.50

10

- Checks; 90-138 . . . . . $10.00
  90-1762 . . . . 15.00
  11-430 . . . . . 22.50

- Fill in total amount at bottom.

- Fill in FRONT of deposit ticket.

(NOTE: Your account number is printed in magnetic ink at bottom of deposit ticket and checks--the last six digits.)

C. Fill in Check Stub. Enter initial deposit on first check stub on the line "DEPOSITED" and on the line "TOTAL."

D. Write First Check. Fill in check stub first with following information:

- No. 1
- $ (Amount): $5.00
- Date: November 4
- To: "Mary Thomas, Treasurer"
- For: Class dues
- Fill in line: "THIS CHECK"
- Subtract this amount from "TOTAL" amd fill in "NEW BALANCE." At the same time fill in same amount on second check stub, on line "OLD BALANCE."
- Now fill in the check and sign it.

Second Check.

- No. 2; $10.72; Nov. 5; To: "Kern Sports Shop"; For: gym shoes and equipment.
- Enter balance on check stub No. 3.

Third Check.

- No. 3; $23.67; Nov. 6; To: "Sloan, Inc.,"; For: class ring.
- Enter balance on check stub No. 4.

E. Make Second Deposit

- Date: November 13
- Currency $15.00
- Checks: 90-638 . . . . 10.00
  90-1762 . . . . 22.00
- Enter deposit on check stub No. 4

F. Fourth Check

- No. 4; $7.50; Nov. 13; To: Associated Students" (your high school); For: Student body card and yearbook.
- Enter balance on check stub No. 5

Fifth Check

- No. 5; $26.91; Nov. 13; To: "Jean's Jeans"; For: School Clothes.
- Enter balance on check stub No. 6.

Sixth Check

- No. 6; $5.00; Nov. 14; To: "Sassano Printing Co."; For: party invitations and favors.
- Enter balance on check stub No. 7.

Seventh Check

- No. 7; $13.29; No. 14; To: 'Pizza Dan's"; For: food and refreshments.
- Enter balance on check stub No. 8.

G. Make Third Deposit

- Date: November 18
- Currency $16.00
- Coin 2.90
- Enter deposit on check stub No. 8.

H. Eighth Check

- No. 8; $6.00; Nov. 21; To: "Solid Music Publishing Co."; For: year's subscription to magazine.
- Enter balance on check stub No. 9.

Ninth Check

- No. 9; $4.27; Nov. 23; To: "Art's Photo Shop"; For: picture reprints.
- Enter balance on check stub No. 10.

Tenth Check

- No. 10; $5.26; Nov. 28; To: "James Wright"; For: purchase of book.
- Enter balance on check stub No. 11

Use these deposit tickets for Activity 7, "KEEP A CHECKING ACCOUNT."

FOR DEPOSIT TO THE ACCOUNT OF

I. M. Student

DATE ..... 19 .....

SIGN HERE FOR LESS CASH IN TELLERS PRESENCE

CASH	CURRENCY		
	COIN		
CHECKS			
TOTAL FROM OTHER SIDE			
TOTAL			
LESS CASH RECEIVED			
NET DEPOSIT			

[redacted]

16-66
1220

USE OTHER SIDE FOR ADDITIONAL LISTING

BE SURE EACH ITEM IS PROPERLY ENDORSED

Bank of Anywhere

⑆1220⑆0066⑆060⑆ 09068⑈0115?⑈

Cut Here - - -

Use these checks for Activity 7 "KEEP A CHECKING ACCOUNT." You will need a total of ten checks.

No. _____ $ _____

_____ 19___

To _____

For _____

	DOLLARS	CENTS
BAL. BROT. FORD.		
AMT. DEPOSITED		
TOTAL		
AMT. THIS CHECK		
BAL. CARD. FORD.		

NOTICE: Have No Alteration or Change on Any C... If Error is Made Write New Check.

I. M. STUDENT

No. E

_____ 19___ 80-61 1222

PAY TO THE ORDER OF _____ $ _____

_____ DOLLARS

BANK OF ANYWHERE

_____

⑆122200611⑆ 01876-61315⑈

at ere

No. _____ $ _____

_____ 19___

To _____

For _____

	DOLLARS	CENTS
BAL. BROT. FORD.		
AMT. DEPOSITED		
TOTAL		
AMT. THIS CHECK		
BAL. CARD. FORD.		

NOTICE: Have No Alteration or Change on Any Check If Error is Made Write New Check.

I. M. STUDENT

No. E

_____ 19___ 80-61 1222

PAY TO THE ORDER OF _____ $ _____

_____ DOLLARS

BANK OF ANYWHERE

_____

⑆122200611⑆ 01876-61315⑈

at ere

No. _____ $ _____

_____ 19___

To _____

For _____

	DOLLARS	CENTS
BAL. BROT. FORD.		
AMT. DEPOSITED		
TOTAL		
AMT. THIS CHECK		
BAL. CARD. FORD.		

NOTICE: Have No Alteration or Change on Any Check If Error is Made Write New Check.

I. M. STUDENT

No. E

_____ 19___ 80-61 1222

PAY TO THE ORDER OF _____ $ _____

_____ DOLLARS

BANK OF ANYWHERE

_____

⑆122200611⑆ 01876-61315⑈

CAREERS WITH MATHEMATICS

Pretest and Post Test

Take this pretest and post test to find out how much you know about careers with mathematics.

1. Match these mathematics-related careers with the major duties involved in each.

Accountant -	a. Prepares and analyzes financial reports
Surveyor -	b. Calculates insurance premium rates
Actuary -	c. Determines property boundaries
Bank teller -	d. Receives and pays out money, records these transactions

2. List three of the main job duties performed by an accountant or bank teller.

_____

_____

_____

3. Name two mathematics-related careers and describe the education and training necessary for entry into each.

_____

_____